



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,836	11/13/2003	Mark R. Gordon	CHA920030026US1	9524
23550	7590	10/30/2008	EXAMINER	
HOFFMAN WARNICK LLC			ADAMS, CHARLES D	
75 STATE STREET			ART UNIT	
14TH FLOOR			PAPER NUMBER	
ALBANY, NY 12207			2164	
			NOTIFICATION DATE	DELIVERY MODE
			10/30/2008	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOCommunications@hoffmanwarnick.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/712,836	<b>Applicant(s)</b> GORDON, MARK R.	
	<b>Examiner</b> CHARLES D. ADAMS	<b>Art Unit</b> 2164	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7-12, 16-21 and 24-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-12, 16-21, and 24-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Remarks***

1. In response to communications filed on 23 July 2008, claims 1, 10, and 19 are amended and claims 6, 15-16, and 23 are cancelled. Claims 1-4, 7-12, 16-21, and 24-26 are pending in the application.

### ***Specification***

2. The disclosure is objected to because of the following informalities:

In claim 10 of the instant application, a 'computer recordable medium' is claimed. However, the specification does not define 'computer recordable medium'. Thus, it is unclear what technology is encompassed by a computer recordable medium, and whether or not claim 10 and its dependent claims are directed towards statutory subject matter.

Appropriate correction is required.

### ***Claim Objections***

3. Claims 1, 10, and 19 are objected to because of the following informalities: the claims contain the limitation "wherein the normalizing results in a saved time per MB that is determined by the change in performance time for a summary table divided by the change in size for a summary table". However, it is unclear whether or not the same summary table is being referred to in each instance. Appropriate correction is required.

***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-4 and 6-9 are rejected under 35 U.S.C. 101 because the claims lack interaction or relationships between physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. They are clearly not a series of steps or acts to be a process nor are they a combination of chemical compounds to be a composition of matter. Though a system and computer device are claimed in 1-4 and 6-9, there is no interaction between the hardware system and the software elements. It is not clear exactly how the 'at least one computer device' is a functional part of the system, as no elements of the system either use it or are related to it in any way.

6. Claims 10-12 and 16-18 are rejected under 35 U.S.C. 101 because the claims lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. They are clearly not a series of steps or acts to be a process nor are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. They are, at best, functional descriptive material *per se*.

In this case, claims 10-12 and 16-18 are a program product stored on a 'computer recordable medium'. As stated above, it is unclear from the specification exactly what technology this entails.

Descriptive material can be characterized as either “functional descriptive material” or “nonfunctional descriptive material.” Both types of “descriptive material” are nonstatutory when claimed as descriptive material *per se*, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lawry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994).

Merely claiming nonfunctional descriptive material, i.e., abstract ideas, stored on a computer-readable medium, in a computer, or on an electromagnetic carrier signal, does not make it statutory. See *Diehr*, 450 U.S. at 185-186, 209 USPQ at 8 (noting that the claims for an algorithm in *Benson* were unpatentable as abstract ideas because “[t]he sole practical application of the algorithm was in connection with the programming of a general purpose computer.”).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2164

8. Claims 1-3, 7-12, 16-21, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bakalash et al. (US Patent 6,385,604) in view of Brickell et al. (US Patent 6,678,676), and further in view of Witkowski et al. (US Patent 7,379,933).

As to claim 1, Bakalash et al. teaches a summary table manager for managing summary tables in an OLAP (OnLineAnalytical Processing database system) (see Bakalash et al. 10:47-11:8), comprising:

at least one computer device (see 9:21-28);

Bakalash et al. does not explicitly teach:

a query analysis system that displays a set of proposed summary tables based on query statistics gathered for a set of inputted queries;

Brickell et al. teaches:

a query analysis system that displays a set of proposed summary tables based on query statistics gathered for a set of inputted queries (see 5:50-6:15);

Bakalash et al. as modified teaches:

a system for calculating a performance measure for each of the proposed summary tables based on the query statistics (see Brickell et al. 5:50-6:15), wherein the performance measure is a combination of both time saved and summary table size (see Brickell et al. 9:15-25), wherein the performance measure for a proposed summary table is determined by identifying a first set of execution queries that utilized characteristics exactly matching a proposed summary table (see Brickell et al. 6:18-46 and 5:66-67),

Bakalash et al. as modified does not explicitly teach:

identifying a second set of execution queries that utilized different subsets of characteristics found in the proposed summary table,

Witkowski et al. teaches:

identifying a second set of execution queries that utilized different subsets of characteristics found in the proposed summary table (see 4:52-55 and 6:52-53 and Table 1, in column 4. Query 1 exactly matches MV1, while Query 2 can be answered with different subsets of characteristics from both MV1 and MV2),

Bakalash et al. as modified teaches:

and merging performance data from first set of execution queries with performance data from the second set of execution queries (see Brickell et al. Table 1, column 6, and 6:35-46 and 8:29-65. Summary tables are measured in relation to each query that would have used the summary table. Also see 9:15-33), and

a system for normalizing performance measures determined for summary tables that are based on different fact tables (see Brickell et al. 5:1-7 and 5:31-50. Summary tables are based on different fact tables), wherein the normalizing results in a saved time per MB that is determined by the change in performance time for a summary table divided by the change in size for a summary table (see Brickell et al. 8:28-65. A benefit measure is calculated for each summary table. The benefit measure calculates a speed increase,  $\text{total time} / (\text{total time} - \text{time saved})$ . Time saved is determined from the SDR factor multiplied by the average execution time (see 8:46-54). Thus, you have  $\text{total time} / (\text{total time} - (\text{total time} * \text{SDR}))$ . SDR is a change in size for a summary table, in that it

Art Unit: 2164

determined by the difference in size between a fact table and its summary table (see 8:35-45). Total time is an average time based on all execution queries, and thus a 'change in performance time'. So, the benefit measure calculated by Brickell et al. is a change in performance time divided by a change in size. Also see 9:12-33 and Figure 3, in which speed benefit is compared to a size in MB).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Bakalash et al. by the teachings of Brickell et al., since Brickell et al. teaches "The one or more summaries are preferably determined by causing the processor to propose a number of summaries, determine the improvement achieved by using the proposed summaries and, select one or more of the summaries in accordance with the improvement achieved using the summary. Thus, this ensures that summaries which result in the most benefit are used" (see 2:28-34).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified Bakalash et al. by the teachings of Witkowski et al., since Witkowski et al. teaches that "Furthermore, if some but not all of the groupings in an aggregate query can be computed from a summary table, then query rewrite is barred, even though there may be summary table from which some of the groupings in the aggregate query may be computed. In this case, a database system is forced to fully compute the aggregate query from the base tables, a far more expensive way to compute an aggregate query than computing it from a summary table. Based on the foregoing, it is desirable to provide a query rewrite process not subject to the limitation discussed above" (see 5:33-42).



As to claims 2, 11, and 20, Bakalash et al. as modified teaches wherein the set of proposed summary tables is determined based on characteristics utilized in the set of inputted queries (see Brickell et al. 6:16-46).

As to claims 3, 12, and 21, Bakalash et al. as modified teaches wherein the performance measure comprises an estimated amount of time saved for using the proposed summary tables (see Brickell et al. 3:19-24)

As to claims 7, 16, and 24, Bakalash et al. as modified teaches further comprising a performance analysis system that determines an actual performance value of each proposed summary table using feedback from the OLAP database system (see Brickell et al. 2:62-3:15).

As to claim 8, 17, and 25, Bakalash et al. as modified teaches wherein the performance analysis system compares statistics for queries using identical characteristics that are obtained before and after creation of a proposed summary table (see Brickell et al. 2:62-3:15).

As to claim 9, 18, and 26, Bakalash et al. teaches further comprising an evaluation system that automatically deletes low performing summary tables (see Brickell et al. 4:5-10 and 7:5-10).

As to claims 10 and 19, see the rejection to claim 1 above.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bakalash et al. (US Patent 6,385,604) in view of Brickell et al. (US Patent 6,678,676), in view of Witkowski et al. (US Patent 7,379,933), and further in view of Dias et al. (US Patent 6,317,778).

As to claim 4, Bakalash et al. as modified teaches the method of claim 1.

Bakalash et al. as modified does not explicitly teach wherein the combination of time saved and summary table size is a multiplication of time saved and summary table size.

Dias et al. teaches wherein the combination of time saved and summary table size is a multiplication of time saved and summary table size (see 5:32-46. Division is a type of multiplication (ie multiplication by an inverse).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Bakalash et al. by the teachings of Dias et al., since Dias et al. teaches that "Based on a chosen metric, measuring system performance, scores or desirability values may be calculated and assigned to objects. Desirability values may provide an evaluation (or an estimate) of improved system performance resulting from replacement and/or duplication of an object in a cache" (see 5:4-9). In addition to this, it would have been obvious to one of ordinary skill at the time

Art Unit: 2164

the invention was made to have modified Bakalash et al. by the teachings of Dias et al. to include this feature to normalize the time saved by the size as they both effect the performance of the system and thus the measure would be more accurate.

### ***Response to Arguments***

10. Applicant's arguments filed 23 July 2008 have been fully considered but they are not persuasive.

Applicant argues that "nowhere does Brickell teach or suggest 'a system for normalizing performance measures.' Brickell merely discloses a Summary to Detail Reduction Factor (SDR), which is a value between 0 and 1 formed by the division of the number of rows in a new summary table by the number of rows in the summary table it replaces". It is noted that the 'detail tables' referred to in this part of Brickell et al. are not additional summary tables, but rather entire fact tables (see 4:59-67).

Applicant continues "Since Brickell's SDR makes no comparison between different factors (i.e. time and space), it fails to truly normalize the performance measure and allow for comparison between summary tables. Brickell's SDR needs additional information in order to create any form of standardization; for example, Brickell points out that the SDR must be applied to "average execution time per day" in order to make useful estimations". It is noted that Brickell et al. does teach in which the SDR (change in size for a summary table) is used in conjunction with the "average execution time per day" (a change in performance time). Also see the rejection to claim 1, above.

Art Unit: 2164

Applicant then states "assuming, *arguendo*, that Brickell teaches a system for normalizing, Brickell still fails to teach normalizing that results in a 'saved time per MB that is determined by the change in performance time for a summary table divided by the change in size for a summary table'. Brickell's SDR, as disclosed above, is a storage to storage comparison that results in a factor with no units. Such a factor is not equivalent to a saved timer per MB normalization, because such a factor is not formed by the division of a change in performance time by a change in size". However, Examiner notes that the complete equation used to measure benefit of a summary table in Brickell et al. is as follows:  $\text{total time} / (\text{total time} - \text{time saved})$ .

As explained in 8:35-56, time saved is equal to a step wherein the SDR factor is applied to this average execution time per day and "the SDR therefore represents the factor by which the query execution time is reduced for a given query, by having the summary table present". As the SDR, which is a measurement of a change in size of a summary table from a detail table, is a component of 'time saved', it is obvious that the SDR is being used to divide the 'total time'. A 'total time', or a measurement of the average execution time of all queries, is a change in performance time, as it represents an average of the times, rather than a single exact performance time. So, a change in performance time is being divided by a change in size in Brickell et al.

### ***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHARLES D. ADAMS whose telephone number is (571)272-3938. The examiner can normally be reached on 8:30 AM - 5:00 PM, M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2164

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. D. A./  
Examiner, Art Unit 2164

/Charles Rones/  
Supervisory Patent Examiner, Art Unit 2164